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ABSTRACT

One way for agencies to reduce fiscal stress is to minimize employee turnover. A project undertaken by San Bernardino County (California) to reduce employee turnover through the development, validation, and use of a non-traditional worker selection instrument (biographical inventory) is described. This project was aimed at the specific classification of Eligibility Worker. Employees in this classification determine the eligibility of clients for public assistance. The approach taken by the County to reduce turnover involves administering a traditional cognitive test, an in-basket examination, and a biographical inventory. The biographical inventory (biodata) consists of a life history item and personal preference items that are empirically analyzed to predict performance on a given criterion such as turnover. The research sample consisted of 563 new employees hired between 1980 and 1987 by the County. The sample was randomly divided into 2 groups: 201 in a cross-validation group, and 362 in a key group. The project demonstrated that the biographical inventory could be successfully developed and validated for the Eligibility Worker job classification. The biodata produced a substantial improvement in tenure prediction when compared to the traditional test. Three figures present study findings, and there is a 13-item list of references. (SLD)

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ELIGIBILITY WORKER SELECTION PROCESS:

BIOGRAPHICAL INVENTORY VALIDATION STUDY

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ABSTRACT

Turnover is extremely costly but few jurisdictions have attempted to reduce these costs through improved selection procedures. As agencies continue to face the fiscal stress created by increasing service demands and limited resources, it is essential that they maximize resource utilization. One way to accomplish this is to reduce turnover costs. The cost of employee turnover may be difficult to quantify; however, its effects are often felt in the area of service delivery. The following outlines a project undertaken by the County of San Bernardino to address the issue of turnover through the development, validation and use of a non-traditional selection instrument. This project was aimed at the specific classification of Eligibility Worker.

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ELIGIBILITY WORKER SELECTION PROCESS:

BIOGRAPHICAL INVENTORY VALIDATION STUDY

One of the essential functions of government is to provide financial assistance to the economically disadvantaged. The job classification most commonly associated with this activity is the Eligibility Worker. Typically, employees in this classification conduct client interviews to determine eligibility for public assistance programs, instruct clients in the completion of forms and compute grant amounts based on eligibility guidelines. The County of San Bernardino currently employs approximately 1,000 Eligibility Workers. This is the County's largest job classification and represents 7% of the total work force.

Staffing the Eligibility Worker classification is critical to service delivery, yet the classification is characterized by extremely high turnover. In addition to the traditional costs associated with turnover, the cost of not maintaining adequate staffing may be direct dollars lost through miscalculations in grant payments or the possible loss of funds due to excessive error rates. Given that the funds expended for public financial assistance comprise one of the largest expenses for local governments, the above costs have been a topic of great concern to the operating department (Department of Public Social Services), executive level County management and, at times, even the County Grand Jury.

The County of San Bernardino has made extensive efforts to develop and refine a multi-faceted selection process designed to reduce turnover. The approach taken by the County involves many components including giving candidates a more realistic picture of the job environment, changes to the job classification structure and a traditional (cognitive) written test, although the more unique aspects of the process are unconventional testing methods including an in-basket examination and a biographical inventory.

This project was supported in part by specialized computer programming provided by TRAC Systems Corporation of Sacramento, California.

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METHOD

Subjects.

The biographical inventory has been administered to all Eligibility Worker candidates since 1980. The research sample consisted of 750 new employees who were hired during the period of 1980 to 1987. The sample was composed of the following:

	Gender		Ethnicity
564	Females	489	Caucasian
186	Males	149	Hispanic
		93	Black
		13	Asian
		6	American Indian/Alaska Native

Instrument.

Biographical inventories consist of life history and personal preference items that are empirically analyzed to predict performance on a given criterion such as turnover. The biographical inventory, or "biodata" for short, has methodological roots in the weighted application blank beginning at the turn of the century. It has been used extensively in the private sector, particularly in the insurance industry (LIMRA). Biodata is being increasingly used in the public sector because, if properly constructed and cross-validated, it can be used to predict a variety of important work criteria across many types of occupations. In addition, biographical inventory scores typically have little or no intercorrelation with scores on more cognitively based tests (i.e., traditional written tests). This allows biodata to be combined with more traditional written tests to increase the predictive capacity of a selection battery. Biographical inventories have also demonstrated little or no adverse impact for minorities and females.

In spite of the above advantages, biographical inventories are infrequently used because they require extensive research efforts and extremely large sample sizes (400-1,000) for test validation. Additionally, some items may not have an obvious relationship to the job or may address issues that many candidates might consider an invasion of privacy. However, previous research has demonstrated that biodata can have predictive relationships with job tenure (Schuh, 1967). Therefore, its application in this case, where turnover was a critical problem, was appropriate. Additionally, as noted above, biodata typically results in low correlations with other selection measures and, thus, could be expected to increase the total validity of the selection battery in the prediction of turnover. Finally, the size of the job classification enabled the development of a sufficient sample size.

The biographical inventory administered to Eligibility Workers consists of items obtained from the Catalogue of Life History Items (Glennon, Albright & Owens, 1966) or modifications thereof. A concurrent validity study had been conducted in 1979 with a sample of three hundred incumbents and an inventory of 50 items. An analysis of these items identified twenty-four items with a significant difference between long tenure

and short tenure employees for at least one response option. Ineffective items were revised or replaced, based on this analysis. Starting in 1980, the revised 50-item instrument was administered to all applicants as part of the written test.

Design.

The design for the project was unusual in that it was longitudinal and predictive. From 1981 to 1987, test answer sheets and applicant tracking information for the cognitive exam and biographical inventory were retained for all new employees to generate the sample group. The data collection period was this extensive for two reasons. First, previous research suggests that the samples utilized for key development and cross validation of biographical inventory instruments should consist of 400 to 1,000 cases (Sproule, 1990). Since the expected "effect size" is relatively small, research samples need to be large to produce sufficient statistical power (Schmidt, Hunter, Urry, 1975). While biodata items do not always result in a small effect size, this seems often to be the case for the prediction of both job performance and tenure (Buel, 1964; French, 1973; Hsu, Darany, & Nettles, 1978). Therefore, data was collected until a sufficient sample size was reached. Additionally, with a focus on turnover, the criterion was tenure. To adequately measure this criterion, a time period was required to determine which employees stayed with the organization. For this reason, the criterion data were not compiled until 1990, although predictor data collection was completed in 1987.

The nature of the biographical inventory and the criterion also required that the study be predictive. Collecting data as part of the selection process assured that the full range of tenure was included in the study. To illustrate, it is fairly common for new hires to quit the job after experiencing the first day of training. If the biographical inventory were administered to incumbents, this valuable data would be lost. Furthermore, since the biographical inventory is intended to predict turnover based on candidate responses to biographical items which include indicating preferences and experience, data collected from incumbents could be influenced by their experience performing the job. Thus, an incumbent group could be very different from an applicant group.

To determine the instruments' ability to predict turnover, the length of employment was determined in number of weeks employed for each employee hired over the seven-year data collection period. In quantifying this variable, the termination date was considered to be the date the employee left the organization. Thus, employees who were no longer employed as Eligibility Workers, but had promoted to other positions within the income maintenance unit, were not treated as turnovers. The rationale is that the employee remained with the organization; therefore, the organization had not lost its investment in the individual. When such promotions and terminations for reasons not felt to be predictable were removed, the total sample contained 563 cases. Non-predictable reasons for termination included death and relocation due to spouses.

The concept of return on investment was also the decision point for dividing the key group for the biographical inventory into upper and lower groups. The operating

department provided input which identified the two-year point of service as essentially a break-even point in terms of investment in the employee. Therefore, individuals with tenure above two years were considered successful hires and placed in the upper group, while those with less than two years service were considered unsuccessful hires and placed in the lower group.

Scoring Key Development.

To develop the key for the biographical inventory, the total sample was randomly divided into two groups, a "key group" and a "cross validation" group. One-third of the sample (201 cases) became the "cross-validation group". The other two-thirds of the sample (362 cases), the "key" group, was used to develop the scoring key.

The key group was further divided. Based upon the criterion measure, the key group was dichotomously divided into "upper" and "lower" groups. As was described previously, these groups were based on a "break even" point of tenure. The upper group had 220 cases and the lower group had 142 cases. A traditional item analysis was performed with the longer tenured cases being the "upper group" and the shorter tenured cases being the "lower group" (See Figure 1). The response patterns of the upper and lower groups were then compared for each question, to determine if there was a significant difference between them. Some questions had significant differences between the upper and lower groups for more than one response option, while other questions yielded no differences on any of the response options. Those questions which demonstrated significant differences between the upper and lower groups were weighted or "keyed". This scoring key was then applied to the biographical inventory responses of the cross-validation group. The result was a biodata score for each member of this group.

Figure 1

Item Analysis and Weighting

Which of these do you dislike most in a job?

A. Confusion
B. Inefficiency
C. Personal bad feelings
D. Lack of a chance to progress

	N	A	B	C	D	
Upper	220	22	46	13	19	percent
Lower	142	19	39	13	28	percent
		+3	+5	+3	+1	

Twenty-six of the items in the 50-item inventory had at least one response option that significantly differentiated between the short tenure (lower) and long (upper) tenure groups.

The scoring key was produced by weighting the response options that were significant in the positive direction as 5, the response options that were significant in the negative direction as 1, and the non-significant response options as 3.

Results.

Correlations of the Predictors with the Criterion.

There were 201 cases in the cross-validation group. The biographical inventory scores computed for the cross validation group were significantly correlated with tenure, $r = .13$. Scores on the cognitive test, the traditional written examination, also produced a significant correlation with tenure, $r = .15$. The multiple correlation coefficient for the two predictors against tenure is .25.

The correlation of the biographical inventory and the cognitive test was - .06. This result is consistent with other research findings which indicate that biographical inventories and cognitive tests may assess separate domains. (Mitchell & Van Rijn, 1991)

Reliability of the Biographical Inventory.

The reliability of the biographical inventory was assessed using the test-retest method. This additional data was collected because the reliability of biographical inventories has rarely been reported in research studies.

Twenty-six candidates took the biographical inventory, both as part of the written examination and then 3 months later, during their first day of training. The correlation of the scores obtained between the two administrations was .67.

Minimum Requirements.

The County has no minimum education or experience requirements for Eligibility Workers. It has been suggested that educational level, previous interviewing experience or previous experience performing clerical duties may be predictors of job success.

Three items were developed to address those areas and were included in the biographical inventory (Figure 2). The response options for each of these items were designed to produce an ascending continuous variable. As such, it was possible to correlate responses to each item with the criterion (tenure in weeks) to investigate possible relationships with turnover. The three items of interest all produced non-significant correlations with the criterion. Based on these results, we have continued to assess the knowledge, skills and abilities to do the job more directly and have no plans to institute other minimum requirements. The biodata items related to educational attainment and previous clerical experience were retained, but not weighted, in the inventory that was implemented based on this research. This was done to allow for further data collection.

Figure 2

Biographical Inventory Items Relevant to Minimum Qualifications

1. Educational background:
   - A. Did not graduate from high school and no GED.
   - B. High school graduate or GED.
   - C. AA or AS degree.
   - D. Bachelors Degree.
   - E. Graduate degree.

2. How much experience in interviewing others did you have before applying for this job?
   - A. None.
   - B. Less than 1 year.
   - C. 1 to 3 years.
   - D. Over 3 years.

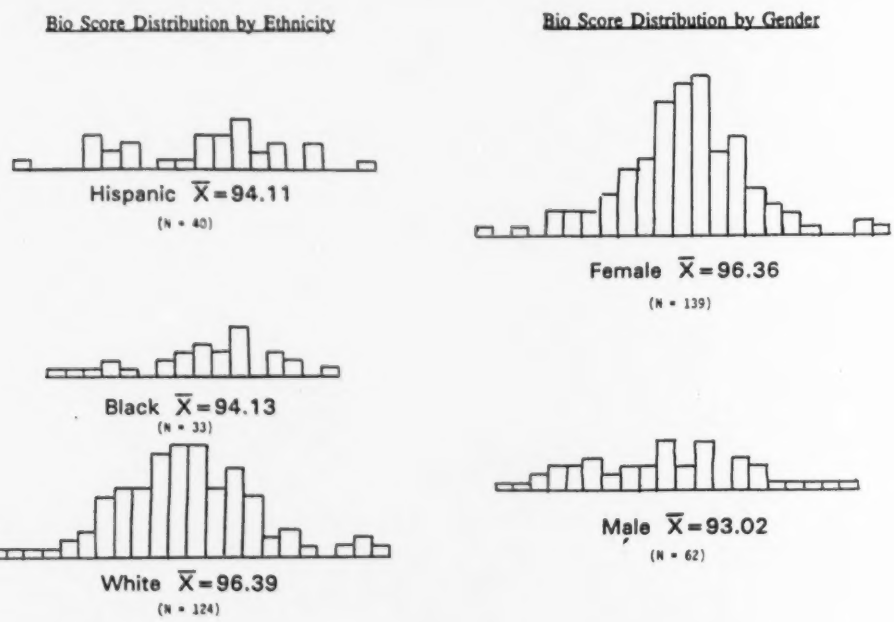
3. How much office clerical experience did you have before you applied for this job?
   - A. None.
   - B. Less than 1 year.
   - C. 1 to 3 years.
   - D. Over 3 years.

Adverse Impact.

One of the added advantages of using biographical inventories is low or no adverse impact (Hsu, Darany & Nettles, 1978; Mitchell, 1989; Thayer, 1976). While there are small numeric differences between the mean scores for males and females, these differences were not significant. There were also no significant differences among the mean scores for White, Hispanic and Black candidates (Figure 3).

Figure 3

Biodata Score Distributions by Ethnicity and Gender



* The total for these subgroups do not equal N because the hold out group contained four employeees from other ethnic groups.

Discussion.

This project demonstrated that a biographical inventory related to turnover could be successfully developed and validated for the Eligibility Worker job classification. Moreover, the biodata produced a substantial improvement in tenure prediction when combined with the existing, more traditional cognitive test. However, other research (Cascio, 1976) has reported stronger prediction, but for somewhat different job types. The potential usefulness of biodata as an assessment tool would be furthered if additional research could clarify these differences. Specifically, is job success (either job performance or tenure) simply more predictable for some occupations? Are the criterion measures comparable, reliable and valid? Have some researchers used biodata items which are themselves more robust? Answers to these questions should allow biodata to be a more consistently effective assessment asset.

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